

SPECIFICATIONS

Rewrite paragraphs [0021], [0030], [0031], [0032], [0033] and [0036].

[0021] Figure 4 is an enlarged end view of the floor slat a hydraulic system schematic;

[0030] A plurality of guide beams 46, that are parallel to the center line 20, are attached to the tops of the cross beams 28. The attachment of the guide beams 46 to the cross beams 28 may be by mechanical fasteners or by welding. The guide beams 46 are a U-shaped channel that extends substantially the entire length of the semi trailer 12. These U-shaped channels 46 have a horizontal base 48 and vertical sides 50 and 52. A horizontal top support plate 54 is integral with top of the vertical side 50. A horizontal top support plate 56 is integral with the top of the vertical side 52. The guide beams 46 have an end that is adjacent to the front end wall 34 and an end that is adjacent to the doors 42 and 44 when the doors are closing the rear discharge opening 40. There is a section removed from each guide beam 46 in the center portion of the semi trailer 12 to provide space for the floor slot slat drive assembly 58. The guide beams 46 are on centers that are spaced apart a distance that is slightly more than the width of the floor slats 60. If the width of the floor slats 60 is 3.610 inches, center lines of the guide

beams 46 may for example, be 3.650 inches apart. This provides a nominal gap of four hundredths of an inch which is generally satisfactorily when using floor slats made from aluminum. If the floor slats 60 are made from material such as resins that can function as low friction bearing surfaces, it may not be necessary to provide a nominal gap between adjacent floor slats to prevent sliding contact between adjacent floor slats. However, it may be necessary to provide for thermal expansion. The number of guide beams 46 required depends on the inside width of the cargo container 38 and the width of the floor slats 60. In some reciprocating floor conveyors ten to twenty-four or more guide beams 46 are required. Reciprocating floor conveyors 10 with wide floor slats 60 have been used which employ two space guide beams 46 for each floor slat.

[0031] The slide bearings 62 are shown in Figures 5, 6, 7, and 8. The slide bearings 62 are made from an from an ultra high molecular weight (UHMW) plastic that has a low coefficient of friction, high wear resistance and high strength. Each side slide bearing 62 has a base 64 with a flat bearing surface 66. Spaced apart vertical side plates 68 and 70 extend upwardly from the base 64. The side plates 68 and 70 also include triangular portions 72 and 74 that extend downwardly from the base 64. A vertical transverse wall 76 extends from triangular portions 72 of side plate 68 to the triangular

portion 72 of the side plate 70 and downward from the base 64. A vertical transverse wall 78 also extends between the triangular portions 74 of the side plates 68 and 70 and downward from the base 64. The base 64 and the walls 76 and 78 form a channel 80 that receive a top flange 82 of a cross beam 28. The base 64 of each slide bearing 62 sits on the upper surface of the flange 82. The vertical transverse walls 76 and 78 contact front and rear edges of the cross beam 28 and prevent movement of slide bearings 62 parallel to the guide beams 46. Wing members 84 and 86 of the slide bearings 62 are integral with the upper edges of the side plates 68 and 70 and extend laterally outward from the side plates. Each wing member 84 and 86 has a bearing surface 88 or 90. Upper fingers 92 shown in Figure 7, are provided on the upper outside surface of both plates 68 and 70. Lower fingers 94 are provided on the lower inside surface of both side plates 68 and 70. The upper fingers and the lower fingers extend the length of the side plates 68 and 70.

[0032] During installation of the slide bearings 62, each bearing is forced down between two guide beams 46. The channel 80 receives one of the cross beams 28 to fix the position of each slide bearing 62 along the length of the guide beams 46. The upper fingers 92 snap into position under the outer edge of the top support plates 54 and 56 of two adjacent guide beams 46 to lock each slide bearing in place and hold the base 64 in

position adjacent to the top of flange 82 of a cross beam 28. The base 64 is preferably held in an engagement with the cross beam 28. The floor slats 60, as shown in Figures 4, 5, and 8 can be made from metals or from resins. Aluminum floor slats 60 are employed in many floor conveyors 10. Resins are used to make floor slats for conveying caustic materials as well as other materials. Floor slats made from resins can be reinforced by fibers such as glass, carbon and fiber cloth layers of unidirectional fiber net material sold under the trademark KELVAR® an owned by New England Ropes, Inc.. Resins floor slats may be formed by extrusion processes. If a resin with fiber reinforcement is used, a modified extrusion process referred to as pultrusion is used to move the fibers and resin through a forming dye. Aluminum floor slats 60 are generally made by an extrusion process. Floor slats 60 can also be formed by casting and other manufacturing processes.

[0033] Each floor slat 60 includes a top section 102 with a generally horizontal top surface 104. Ribs 106 can be added to the top surface 104 to ~~strength~~ strengthen the floor slat 60 if desired. The thickness of top section 102 can be increased in some areas to increase floor slat strength. A bottom surface 108 of the top section 102 is a slide bearing contact surface. A generally vertical first wall 110 extends downward from a first side of a top section 102. The first side wall 110 also extends substantially the length of the top

section 102 in most reciprocating floor conveyors 10. A generally vertically second side wall 112 extends downward from the second side of the top section 102. The second side wall 112 also extends substantially the length of the top section 102. The top section 102 and the first and second side wall 110 and 112 form a channel shape member.

[0036] The top section 102 of the floor slat 60 includes a top section cantilevered portions 130 that extends laterally outward past the second side wall 112 and has a downwardly facing generally horizontal seal contact surface 132. This portion 130 of the top section 102, with a second seal contact surface 132 supports cargo. The cargo supported by this portion 130 exerts some force on the second side of the floor slat 60 that tends to rotate the slat about the slat long axis. When two floor slats 60 are mounted in a floor conveyor 10 adjacent to each other, the first seal supports surface 120 is directly below the second seal contact surface 132 and is spaced from second seal contact surface. A combination seal and bearing 134 has a rectangular cross section and extends substantially the entire length of the floor slats 60. The seal retainer channel 126 receives the combination seal and bearing 134. A snug fit between the seal and bearing 134 and the channel 126 limits movement of the seal relative to the channel. The seal 134 is preferably made from an ultra high molecular weight (UHMW) plastic or similar material. This

plastic material is flexible, tough and has a low coefficient of friction. UHMW plastic expands when the temperature increases and contracts when the temperature decreases. To accommodate length changes in the seal 134, the seal must be free to float in the channel 126 in a direction parallel to the long axis of the floor slats 60. Seal contraction and expansion is accommodated by an anchor 136. The anchor 136 can be a threaded member that screws into a threaded bolt passage through the vertical wall 122 and extends into the seal 134 in one location between the ends of the seal. The anchor 136 fixes the seal 134 in one place relative to the channel 126 and leaves the ends of the seal to move toward or away from the anchor due to temperature changes. Seal expansion can also be accommodated by end stops at both ends if the highest temperature of the seal 134 is known. When the highest temperature is known, the seal 134 can be cut with a selected length that does not exceed the distance between the end stops at maximum seal temperature. The threaded anchor 136 can be replaced by a non-threaded fastener.